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## What is the influence of low back pain on muscle activity and movement during a cyclical dynamic task?

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**Introduction:** Low back pain (LBP) is a leading cause of disability. High-density electromyography (HDEMG) has revealed differences in the spatial distribution of back muscle activity during movements. However, these studies have only considered a small portion of the erector spinae (ES) during tasks which were either static or mono-planar.

**Methods:** This study combines HDEMG and kinematic analysis to investigate the effect of LBP on the spatial distribution of ES activity during a dynamic lifting task. Sixteen people with chronic LBP (8 male, age:  $26.9 \pm 10.8$  years) and 16 age and gender-matched controls (7 male, age:  $31.7 \pm 14.0$  years) completed the study. HDEMG signals from the ES were detected bilaterally by four 64-channel semi-disposable  $13 \times 5$  electrode grids. Kinematic surface markers were placed over the back in triangular arrangements, creating lumbar and thoracic segments to track movement. HDEMG and kinematic data were recorded continuously during a dynamic task involving the cyclical lifting of a 5 kg box between 6 shelves for 10 cycles (~7 minutes). The shelves were arranged around the participant, at knee and sternal height.

**Results:** Data analysis is underway; with full results presented at the conference.

**Conclusions:** This study will impact on our understanding of neuromuscular adaptations to LBP during functional activity.